

Research Report

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Preparing for "Post-ISIL" Access Challenges

Robust Basing to Support Operations Against Nonstate Adversaries

The research presented here focuses on addressing the basing challenge of recurrent interruptions in the pressure (intelligence, surveillance, and reconnaissance [ISR] and strike operations) that can be exerted against nonstate adversaries.[1] Our analysis is presented in the context of a post–Islamic State of Iraq and the Levant (ISIL) Iraq, a case in which the underlying conditions are shifting. In the Middle East and Africa, recurrent access crises—demands to vacate bases, restrictions on type and nature of operations, and loss of overflight rights—are rooted in the geographic, economic, social, and political characteristics of the regions. The result has often been ephemeral basing access in these regions.

METHODOLOGY

- The authors developed an analytic tool to address the basing challenge of recurrent interruptions in intelligence, surveillance, and reconnaissance and strike operations that can be exerted against nonstate adversaries.
- The sequential basing tool is designed to analyze the robustness of an existing basing posture and identify the robustness benefit of an additional base based on its location.
- The tool looks for robust and flexible basing options that can be used to cope with changing conditions. The output is a geographical representation—a heat map—of current operational effectiveness and the contribution additional basing options would make to the overall posture robustness.
- The demonstration of the tool in this report focuses on the operational effectiveness and robustness specifically of CENTCOM's "post-ISIL" regional posture.
- In contrast to more-traditional planning approaches, the approach outlined in this report accepts the ephemeral nature of basing access.

To help address these challenges, we developed an analytic approach known as sequential basing. The approach is premised on the paradoxical constancy of ephemeral access, as driven by the underlying conditions of ever-evolving threats, shifting policy priorities, and other sources of political dynamism. In contrast to more-traditional planning approaches, this one accepts the

[1] Researchers at the RAND Corporation have long recognized the importance of basing resiliency. Much of this work has focused on countering threats posed by near-peer adversaries in antiaccess, area denial environments (A2ADs). For an overview of this work, see Pettyjohn and Vick, 2013; Thomas et al., 2015; and Hagen et al., 2016.

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ephemeral nature of basing access.[2] By doing so, this approach allows planners to construct a posture that can withstand the loss of basing rights in various locations without putting the overall effectiveness of a campaign in jeopardy.

Sequential basing has been implemented as an interactive tool that runs inside a Firefox web browser. This tool allows planners to explore a wide set of basing options and to test hypotheses across a range of scenarios. Planners can use their own knowledge and professional military judgment to examine relevant cases. The tool looks for robust and flexible basing options that can be used to cope with changing conditions. The output is a geographical representation—a heat map—of current operational effectiveness and the contribution additional basing options would make to the overall posture robustness.

[2] In a 2014 speech, then–Deputy Secretary of Defense Robert O. Work articulated the need for a "new global posture, which has got to be more dynamic and flexible" (Work, 2014). See, also, Henry, 2006.

Abbreviations

ANF	al-Nusrah Front
AQ	al Qaeda
CENTCOM	U.S. Central Command
ISIL	Islamic State of Iraq and the Levant
ISR	intelligence, surveillance, and reconnaissance
TOS	time on station

Context

ISIL has been pushed to the brink of defeat in Iraq and Syria. What comes next is unclear. The local, national, regional, and global political dynamics at play in the CENTCOM area of responsibility are complex and interdependent in ways that make political trends very difficult to predict. What is clear, however, is that one phase of the conflict against ISIL is coming to an end and a new phase will begin in the coming months. That new phase will be characterized by profoundly different political dynamics because ISIL and the operations against it will no longer play such a central organizing role in the region. In other words, this is a textbook case in which CENTCOM will need to continue to conduct operations while the underlying conditions are shifting.

The struggle for mastery in the new Iraq is far from over. Iraqi views on the U.S. role in that struggle are divided and evolving. In the near future, the likely sources of recurring crises and instability in Iraq—or even another round of open civil war—will be the questions of Kurdish autonomy, Sunni-Shi'a conflict, competition among Shi'a factions, and the control and remit of the central government. Amid

these questions, one particularly plausible scenario is that the government of Iraq will curtail or terminate U.S. access to bases and airspace. It is possible that the United States will be allowed to maintain its current access arrangements despite the unfolding turmoil, but it seems more likely that some form of curtailment may result. Complete termination is a distinct possibility. Meanwhile, the ambitions of important regional powers, including Iran and Turkey, diverge from the preferences of the United States.

This creates a planning challenge for CENTCOM. The U.S. government lacks decisive influence over the political dynamics that will determine the scale and degree of U.S. access in Iraq and the region more broadly. CENTCOM must therefore plan for the possibility of losing access to Iraqi bases and airspace and of needing to negotiate for access to other locations. Such planning, in turn, will require an analytical approach for assessing the implications of various combinations of restrictions and opportunities. We have developed such an approach and conducted a preliminary assessment using publicly available information.

Approach

Posture planning must consider many factors, including political constraints, platform capabilities, airfield infrastructure, security, weather, and flight times and distances. In our preliminary analysis, we focus on strategic geography—the interaction between threat-network spatial characteristics and the political and aeronautical geography of the region—to assess the importance of access, at any particular location, to U.S. objectives in the region. The question thus becomes, "What locations are most important to the operational effectiveness and robustness of CENTCOM's regional posture?"

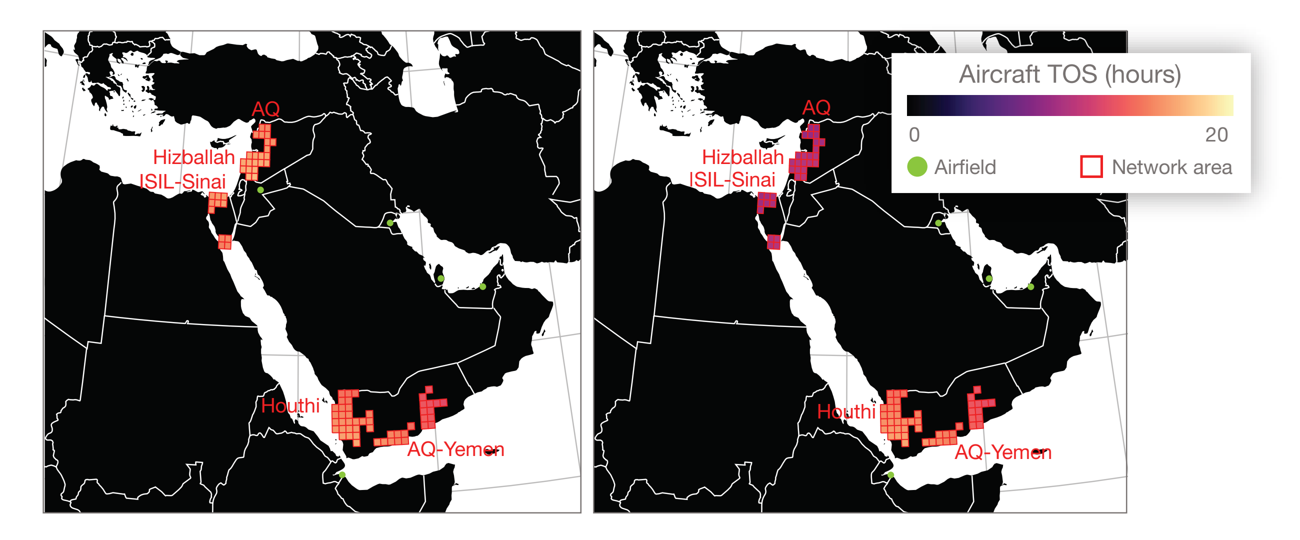
The core of our analysis consists of detailed modeling of the maximum potential time on station (TOS) of ISR aircraft against adversary networks, and then of TOS susceptibility to any loss of basing and overflight access.

To compute the TOS, our model uses geospatial data on adversary network characteristics, on airfields available for U.S. combat operations, and on airspace restrictions, coupled with aircraft performance metrics—notionally, in this analysis, for an MQ-9 Reaper. The model simulates sorties against every node of selected adversary networks and from every currently available base. To compute susceptibility, the model then repeats the simulation thousands of times, removing combinations of bases and measuring the detrimental impacts on TOS. Each time, the result gives a measure of the "robustness" of the baseline posture to a loss of access to bases. The model then repeats this process in reverse, first adding a single basing location to measure the marginal increase in robustness because of that hypothetical addition, and then repeating this for every possible basing location in the theater. Finally, the results are integrated to produce estimates of the effectiveness and

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FIGURE 1

Baseline Time on Station (Left) and Time on Station with No Basing in Jordan (Right)



robustness of any posture, the impact of losing access to any existing base, and the value of adding any new base. These results are expressed numerically and graphically in the theater robustness heat maps.[3]

Analysis

For this project, we calculate the TOS per sortie for MQ-9s operating out of airfields in Jordan, Kuwait, Qatar, the United Arab Emirates, and Djibouti and targeting the five adversary networks labeled in Figure 1 as al Qaeda (AQ), Hizballah, ISIL-Sinai, Houthi, and AQ-Yemen. The figure shows that the baseline TOS per sortie against the five networks averages 17.0 hours. However, this posture is very fragile: Losing access to bases in Jordan, for example, reduces the average TOS per sortie to 12.6 hours and particularly the TOS against AQ, Hizballah, and ISIL-Sinai to fewer than ten hours. The AQ affiliate in Syria is also known as the al-Nusrah Front (ANF).

Our analysis shows that the TOSs against ANF (AQ in Syria), Hizballah, and ISIL-Sinai are highly susceptible to loss of access. This is because the targeting of these three networks relies on basing out of Jordan, with the only secondary option being operations out of Kuwait (which is both not proximate and subject to potential overflight restrictions over Saudi Arabia and Iraq). Similarly, the Houthi network is highly reliant on operations out of Djibouti. The only network for which the baseline posture appears robust is AQ-Yemen, due to its relatively central location in Yemen between Djibouti, Qatar, and the United Arab Emirates. Figure 2 details the robustness of the current posture against each network in percentages.[4]

This analysis suggests the need to strengthen the basing posture against adversary networks in and around Syria and the Sinai Peninsula. Therefore, we provide a first-order estimate of the options for strengthening the posture across the region. The objective is to identify new basing locations that, on average, would increase the posture robustness to the greatest extent possible.

[3] The heat maps explicitly do not include data on existing airfields or suitability of the location for U.S. operations. We find it more effective to not include this level of fidelity but rather to present findings that allow planners to focus on geographic regions of particular interest for further analysis and exploration.

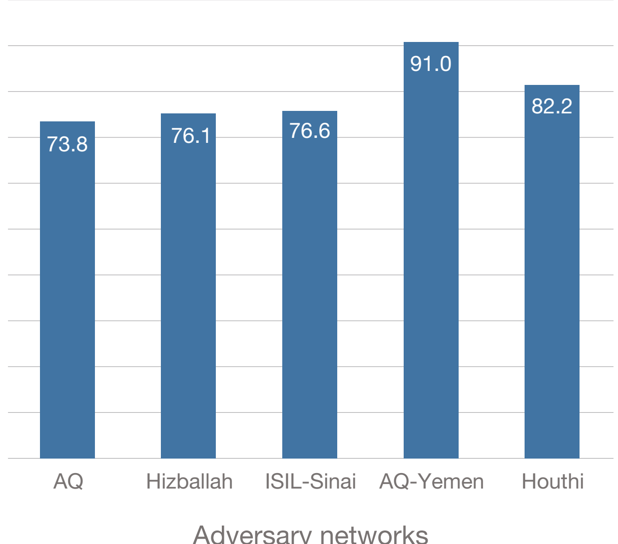
[4] This simple measure of robustness is defined as the decreased TOS per sortie averaged across all possible combinations of lost basing access in two countries. Therefore, a robustness of 75 percent means that the loss of access to basing in any two countries would, on average, result in a 25-percent decrease in TOS per sortie. The interactive nature of the tool allows planners to further explore sensitivities and correlations.

Figure 3 shows potential locations of new bases across the region, with each location scored by its likely increase to the overall posture robustness. The results highlight several promising regions. A new base in northern Saudi Arabia, northeastern Egypt, southern Turkey, Lebanon, or Cyprus would boost robustness against networks in and around Syria and the Sinai Peninsula. A new base in southern Saudi Arabia or Oman would moderately increase robustness against networks in Yemen, particularly against the Houthi network. Lebanon was identified as the single location of greatest benefit to basing robustness, raising it an average of 14 percentage points to just under 94 percent.

The addition of a single location can thus provide significant increases in basing robustness. Adding a single operating location in northern Saudi Arabia can increase CENTCOM's overall posture robustness by 12.7 percentage points, from 79.8 percent to 92.5 percent of the baseline TOS. In other words, even with the loss of basing, overflight rights, or both in two other countries, the pressure on adversary networks would decrease, on average, only 7.5 percent if an operational base were also added in northern Saudi Arabia, as opposed to falling 20 percent without any additional locations.

FIGURE 2

Posture Robustness Against Adversary Networks



Next Steps

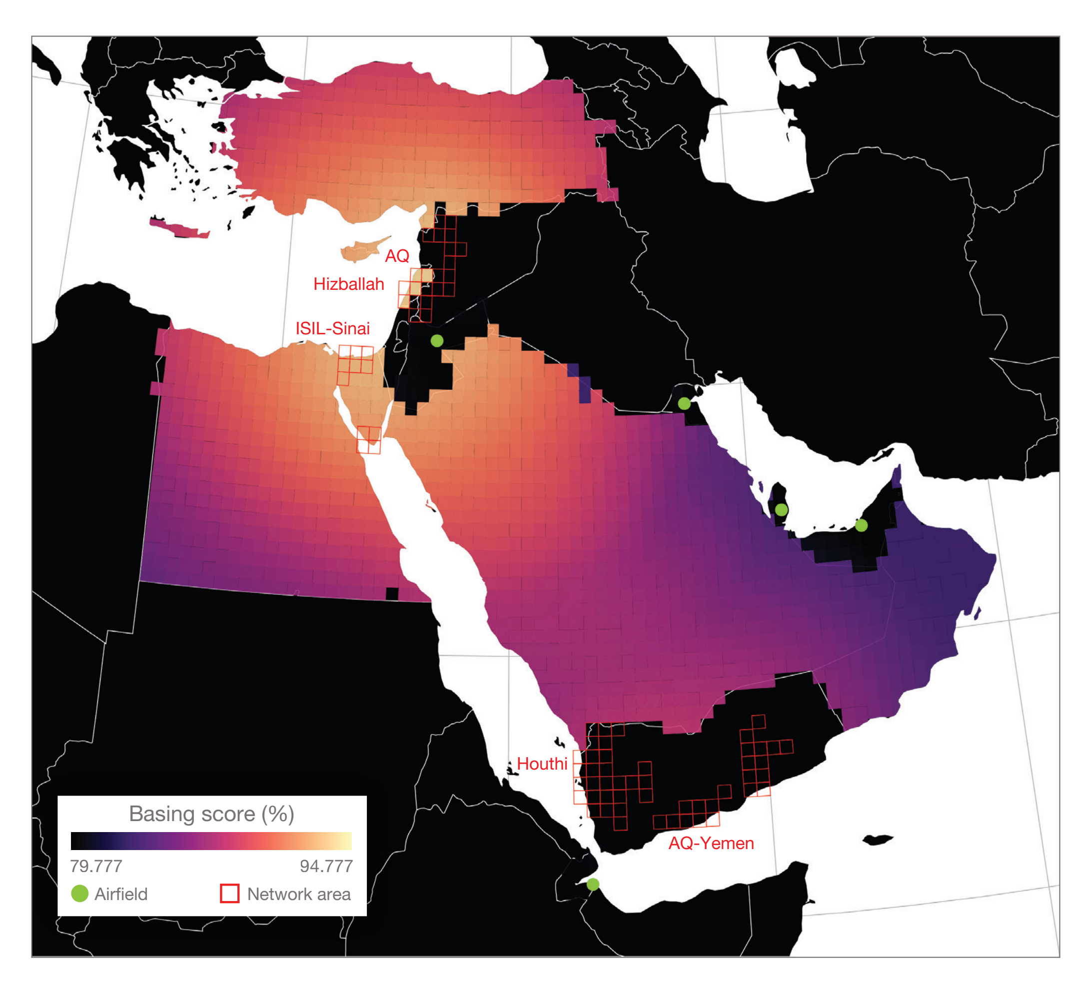
None of the potential basing options presented in Figure 3 is without challenges, which must be fully understood and weighed against the effectiveness and robustness each option offers. The fragility of the baseline posture is also greater when considering shorter-range aircraft, such as manned ISR platforms and fighter aircraft. When considering manned ISR platforms, for example, the robustness against AQ in Figure 2 drops by more than 10 percentage points than when considering the MQ-9.

We are looking to develop similar analytic techniques for mobility aircraft by incorporating metrics for tons delivered and ton-miles flown. We are also beginning to explore the incorporation of weather, not only to understand the disruption it can cause at a single location but also to understand how weather is or is not correlated with different basing locations. In addition, we are exploring the possible adaption of such measures of robustness to A2AD scenarios.

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FIGURE 3

Robust Basing Options in a Post-ISIL Context



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About This Report

This research was sponsored by the Office of the Secretary of Defense and conducted within the Acquisition and Technology Policy Center of the RAND National Defense Research Institute, a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Navy, the Marine Corps, the defense agencies, and the defense Intelligence Community.

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